US Water Pipelines Are Breaking

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Two hours north of New York City, a mile-long stream and a marsh the size of a football field have mysteriously formed along a country road. They are such a marvel that people come from miles around to drink the crystal-clear water, believing it is bubbling up from a hidden natural spring. The truth is far less romantic: The water is coming from a cracked 70-year-old tunnel hundreds of feet below ground, scientists say.

The tunnel is leaking up to 36 million gallons a day as it carries drinking water from a reservoir to the big city. It is a powerful warning sign of a larger problem around the country: The infrastructure that delivers water to the nation's cities is badly aging and in need of repairs.

The Environmental Protection Agency says utilities will need to invest more than $277 billion over the next two decades on repairs and improvements to drinking water systems. Water industry engineers put the figure drastically higher, at about $480 billion.

Water utilities, largely managed by city governments, have never faced improvements of this magnitude before. And customers will have to bear the majority of the cost through rate increases, according to the American Water Works Association, an industry group.

Engineers say this is a crucial era for the nation's water systems, especially in older cities like New York, where some pipes and tunnels were built in the 1800s and are now nearing the end of their life expectancies.

"Our generation hasn't experienced anything like this. We weren't around when the infrastructure was being built," said Greg Kail, spokesman for the water industry group. "We didn't pay for the pipes to be put in the ground, but we sure benefited from the improvements to public health that came from it."

He said the situation has not reached crisis stage, but without a serious investment, "it can become a crisis. Each year the problem is put on the back burner, the price tag is going to go up."

Catastrophic problems can arise when infrastructure fails. An 84-year-old steam pipe erupted beneath a New York street last year, creating a mammoth geyser that rained mud and debris down on the city. In Chicago, an 80-year-old cast-iron water main broke earlier this year, spilling thousands of gallons and opening up a 25-foot hole in the street.

In Denver, up to 4 million gallons of water gushed from a ruptured 30-year-old pipeline in February, gouging a sinkhole across three lanes of Interstate 25. The lanes were shut down for nearly two weeks. Cleveland has spent hundreds of millions of dollars on infrastructure in the past 20 years but still must repair daily breaks. Last month, a break in a 2 1/2-foot-diameter water main turned a downtown square into a watery crater and knocked out other utilities.

The amount of wasted water from these breaches is staggering. The 36 million gallons a day that leak from the 85-mile-long Delaware Aqueduct in New York state amounts to more than 1 billion gallons a

month, enough to change the ecology of the area, say scientists from the Riverkeeper environmental watchdog group. That may be a drop in the bucket compared to the hundreds of billions of gallons of water consumed in New York City every year, but the daily leak in the tunnel would meet the daily demands of drought-ravaged Raleigh, N.C.

Residents in Wawarsing, about 100 miles from New York City, blame tunnel leaks for the constant flooding in their yards and basements. Department of Environmental Protection engineers are trying to determine whether the aqueduct is really responsible for the soggy mess along Route 209 that has gotten considerably worse over the last 10 years.

David Sickles said the water just bubbles up from the cracks in the concrete in his basement — even when it doesn't rain.

"It's like there is too much water in the ground already," Sickles said, showing off the water line on the concrete wall of his basement. "There's no place for this to go."

Nearly every house has a black discharge hose running from the basement through the yard, gushing water into already-soggy patches of grass.

The land around Laura Smith's house turns into a lake when the snow melts, and her driveway is so muddy your feet sink when you walk to her front door.

Utilities currently spend about $10.4 billion annually on large-scale repairs and improvements on drinking water infrastructure, a figure that has been relatively flat during the past two decades, the EPA said.

Cities have a hard time convincing residents that they should spend money on something they never see, buried hundreds of feet underground. And often, public officials pawn the responsibility off on the next person elected, Kail said.

Repairs tend to be long and costly, especially since many systems were built nearly a century ago, deep underground, where buildings and major roads now stand.

Even monitoring pipes for vulnerabilities can be expensive and tricky, since it's not possible to shut down a city's water supply to test for leaks. If New York were to do that to the Delaware Aqueduct, for example, the 13 1/2-foot-diameter tunnel might crumble under the crushing weight of the land without the water to support the duct.

The Department of Environmental Protection monitors leaks by sending water through the tunnel and measuring how much comes out at the end. The department also sends robots that swim through the tunnels and collect data on their condition.

The amount of water being lost is inconsequential, given that reservoirs are so full, said Environmental Commissioner Emily Lloyd. But she said it is important to fix the leaks now because there is no way to tell how the system might deteriorate in the next 30 years.

New York has spent decades digging a new $6 billion tunnel that will create an alternative source of water delivery and allow for easier inspection and repair of the other tunnels. It is expected to be

completed by 2020.

Around the country, water rates are going up to help pay for the repairs, estimated at anywhere between $550 and $7,000 per household during the next three decades.

Augusta, Ga., raised rates 11 percent from 2001 through 2007 for a $300 million program to improve the deteriorating water system. Cleveland gradually increased rates by about 6 percent for more than 15 years to fund a $750 million project to address aging and inefficient pipes. Springfield, Mass., doubled rates for its 250,000 customers. Philadelphia, Kenosha, Wis., Portsmouth, Va., and other cities have followed suit.

Many engineers and water utilities say water bills around the country are too low. In New York City, where a studio apartment can rent for more than $3,000 a month, the cost of water and sewage is about $60 for an entire single-family home.

"We are the only utility where the raw material is free, but the infrastructure is the most expensive," said Nick DeBenedictis, chief executive of Aqua America, a water company that serves 3 million people in 13 states. "We have to dig up streets in order to do it, but once we make investments it's good for years."